Highlights

The Burden of Heart Disease and Stroke in Missouri

Sherri Homan, RN, PhD
Public Health Epidemiologist
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Acknowledgements

Report Authors

- Wayne Schramm
- Kris Kummerfeld

Contributors

- Anita Berwanger
- Linda Powell
- Karen Connell
- Lisa Britt
- Andy Hunter
- Joseph Stockbauer
- Noaman Kayani
- Belinda Heimericks
- Sherri Homan
- Shumei Yun
- Jack Sanders
- Megan Hammann
- Brian Tordoff
- Liz Coleman
- Sue Denny

Organizations

- Missouri Department of Health and Senior Services
  - *Missouri Heart Disease and Stroke Program and Advisory Board*
  - *Section for Chronic Disease Prevention and Nutrition Services*
  - *Section of Epidemiology for Public Health Practices*
- *Centers for Disease Control and Prevention*
- American Heart Association
- American Stroke Association

Missouri Department of Health and Senior Services,. *The Burden of Heart Disease and Stroke in Missouri. 2008* , http://www.dhss.mo.gov/HeartandStroke/HeartStrokeBurdenReport2008.pdf

Heart Disease and Stroke Burden

Indicators

- Mortality, emergency department visits, hospitalizations, dispositions
- Trends in outcomes
- Prevalence of disease and risk factors
- Economic costs
- Geographic and other disparities
- Summary

International Classification of Diseases

MAJOR CARDIOVASCULAR DISEASES

Diseases of the Heart also called "Heart Disease" is comprised of a number of diseases*

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- Acute rheumatic fever
- Hypertensive heart and renal diseases
- Acute myocardial infarction
  - ST-Elevated MI
  - Non-ST-Elevated MI
- Atherosclerotic cardiovascular disease
- Acute and subacute endocarditis
- Other forms of heart disease

Cerebrovascular disease also called "Stroke"*

↓

- Acute stroke
  - Ischemic
  - Hemorrhagic
- Occlusion or stenosis of precerebral arteries
- Other and ill-defined CVD
- Transient cerebral ischemia
- Late effects of CVD

Missouri Department of Health and Senior Services, 2008. *Missouri Information for Community Assessment (MICA)* http://www.dhss.mo.gov/MICA

Heart Disease and Stroke: The Progress

- There has been tremendous progress in reducing heart disease and stroke deaths in Missouri

- From 1997-2007, Missouri's age-adjusted death rates declined for heart disease -31.4% and stroke -25.9%

Missouri Department of Health and Senior Services,. *The Burden of Heart Disease and Stroke in Missouri., 2008.*

Heart Disease and Stroke: The Burden

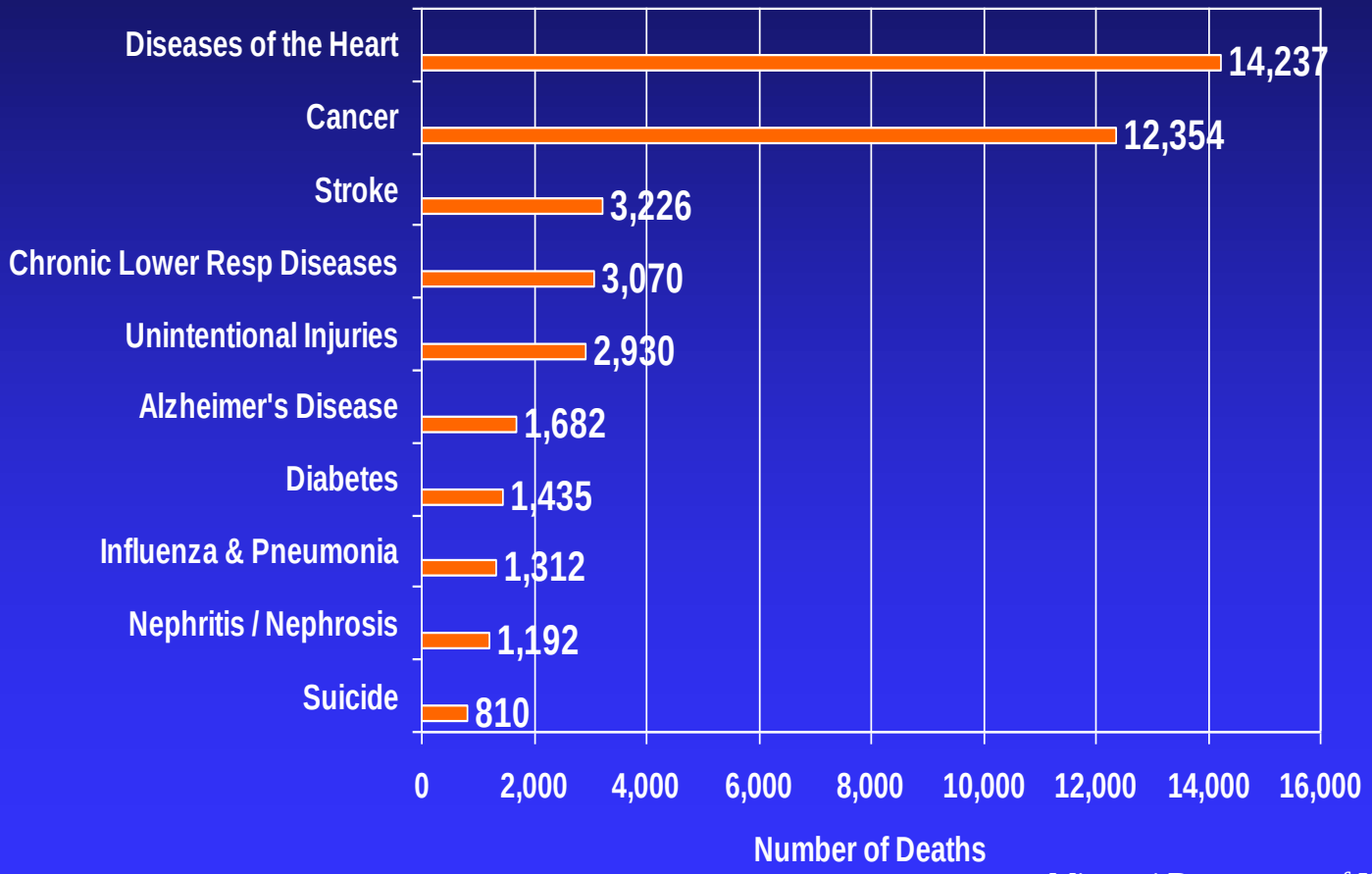
- Despite this progress, heart disease and stroke remain the 1st and 3rd leading causes of death in Missouri and the United States
- Missouri's death rates from heart disease and stroke remain higher than those of the nation
- The high prevalence of risk factors are contributing greatly to this burden

Missouri Department of Health and Senior Services,. *The Burden of Heart Disease and Stroke in Missouri. 2008*

Heart Disease Mortality

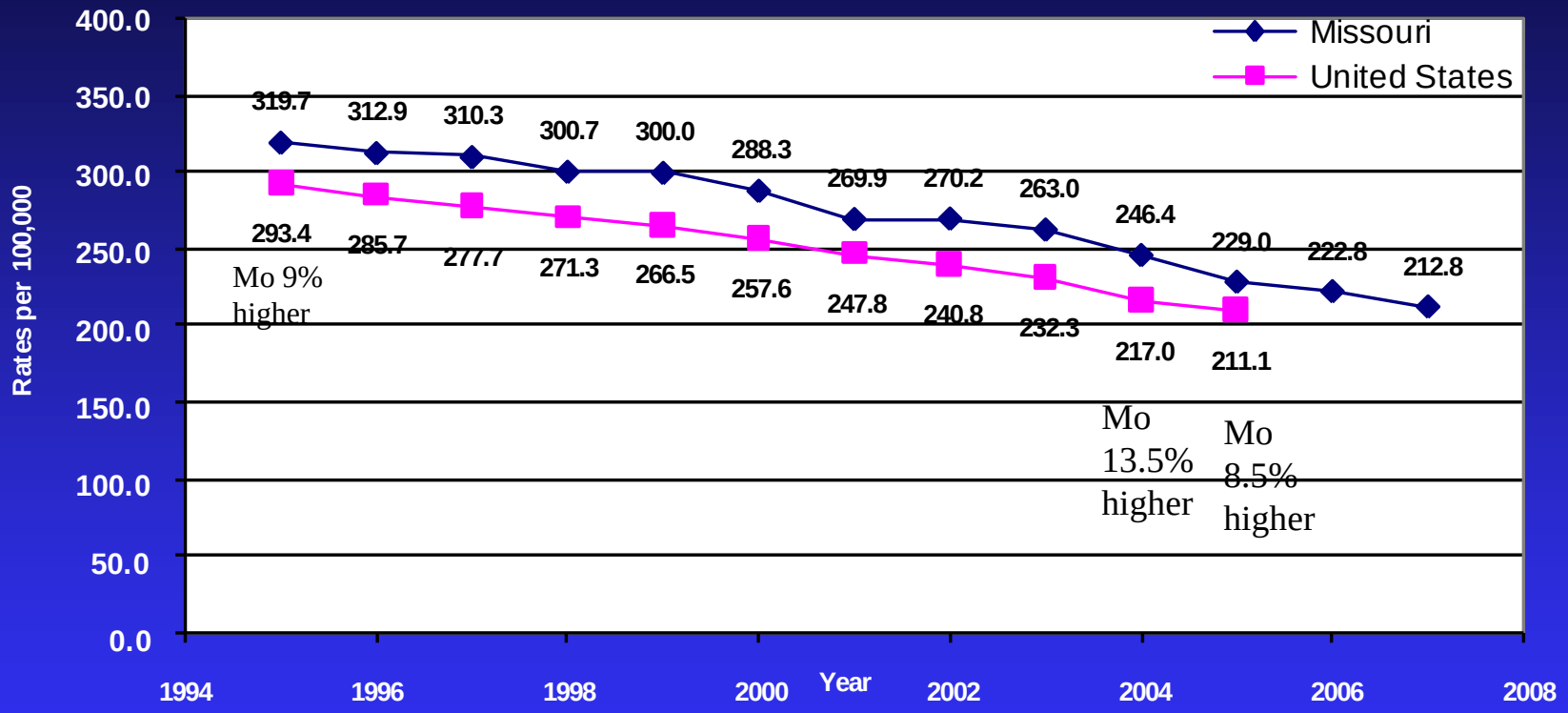
Leading Causes of Death, Missouri, 2007

Heart disease and stroke combined were 32.4% of all deaths
(1 out of every 3 resident deaths)



Missouri Department of Health and Senior Services. *Missouri Vital Statistics.* 2007
http://www.dhss.mo.gov/VitalStatistics

Heart Disease Mortality Rates, Missouri and United States, 1995-2007

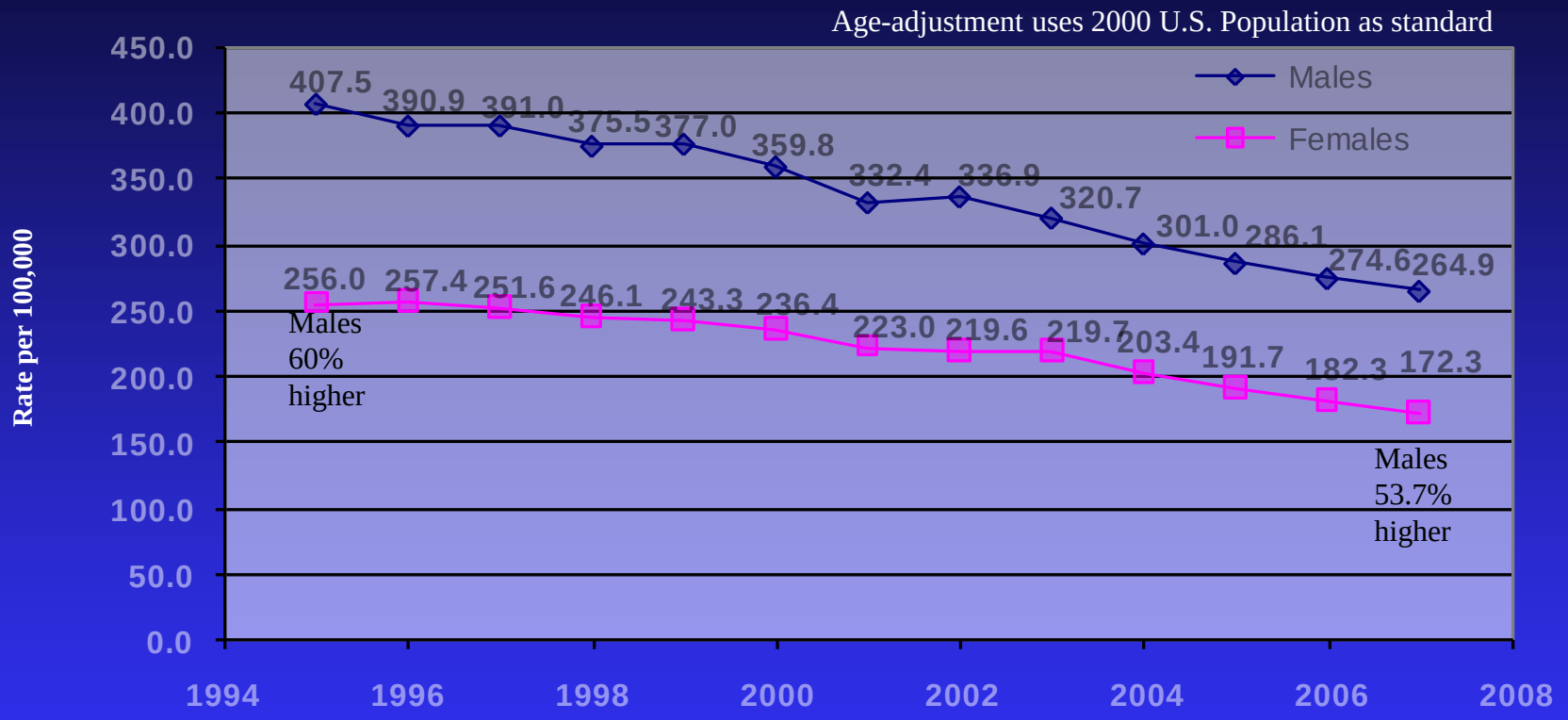


Age-adjustment uses 2000 U.S. Population as standard

Missouri's rate was 9.0% higher than U.S. in 1995, 13.5% higher in 2004 and remains 8.5% higher in 2005

Missouri Department of Health and Senior Services. 2008 *Death MICA*. http://www.dhss.mo.gov/DeathMICA/ and National Center for Health Statistics, http://www.cdc.gov/nchs/

Heart Disease Mortality Rates by Gender, Missouri, 1995-2007

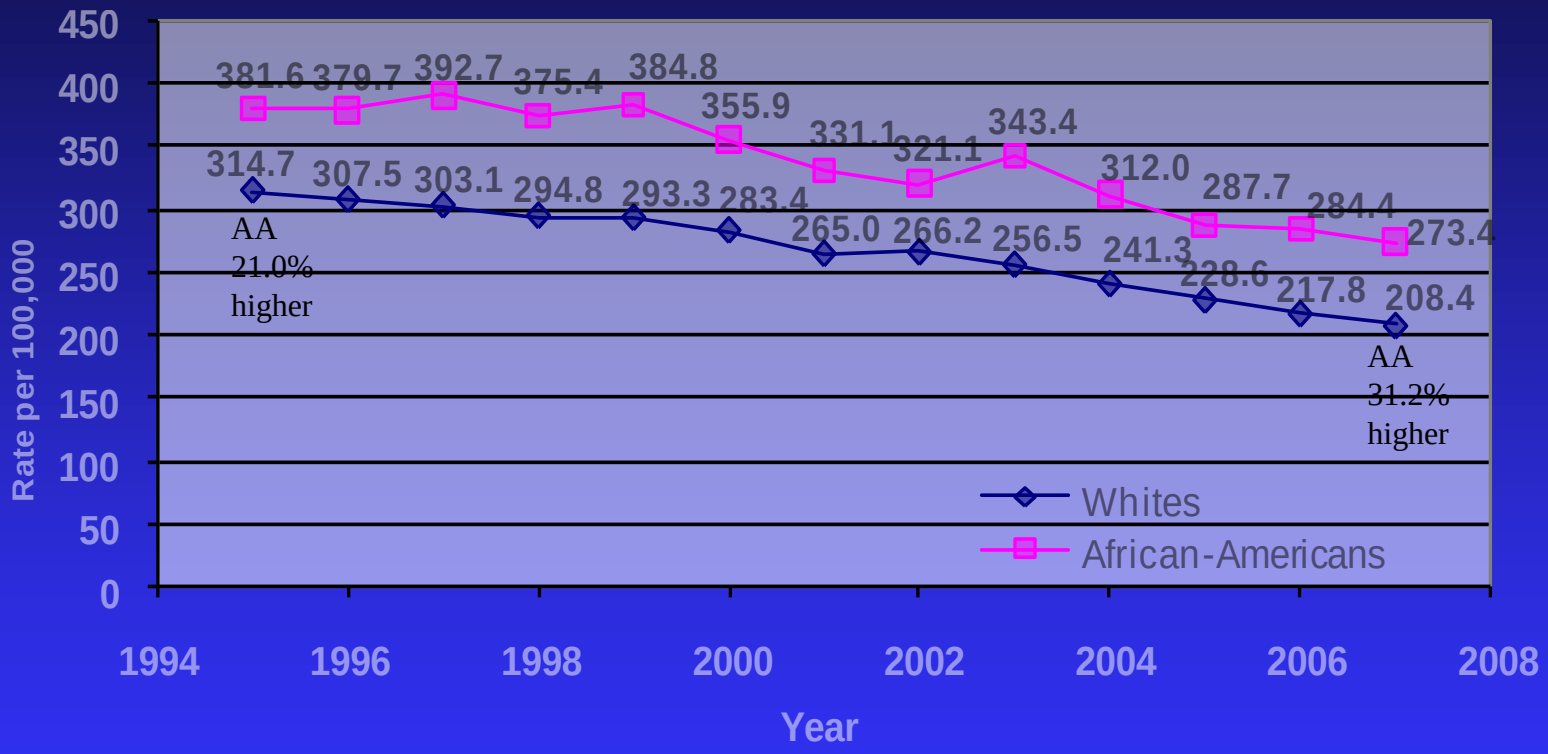


- **The death rate among males was 60.0% higher than females in 1995 and remains 53.7% higher in 2007**
- **However, the number of deaths each year is higher for women than men (7,253 v. 6,984 in 2007) due to their being generally older than men in the population.**

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/ and National Center for Health Statistics, http://www.cdc.gov/nchs/

Heart Disease Mortality Rates by Race, Missouri, 1995-2007

Age-adjustment uses2000 U.S. Population as standard



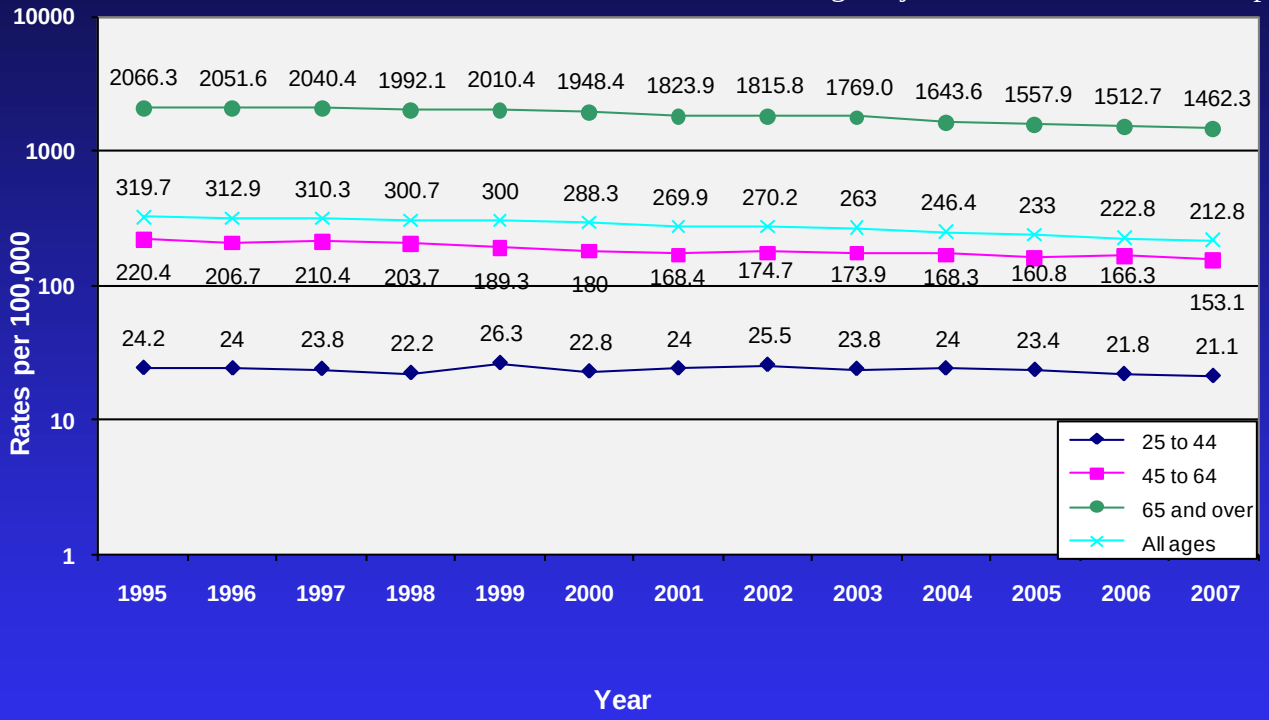
The death rate among African-Americans was 21.0% higher than Whites in 1995, and the gap has increased to 31.2% higher in 2007

Rate significantly higher among African – Americans than whites

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/ and National Center for Health Statistics, http://www.cdc.gov/nchs/

Heart Disease Mortality Rates by Age Groups, Missouri, 1995-2007

Age-adjustment uses 2000 U.S. Population as standard



Heart disease deaths are highly correlated with age - about 10 times more likely for people 65 and older compared to people 45 to 64.

This chart is on a logarithmic scale, meaning it uses the logarithm of a rate instead of the rate itself in order to compare the large range of ages.

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/

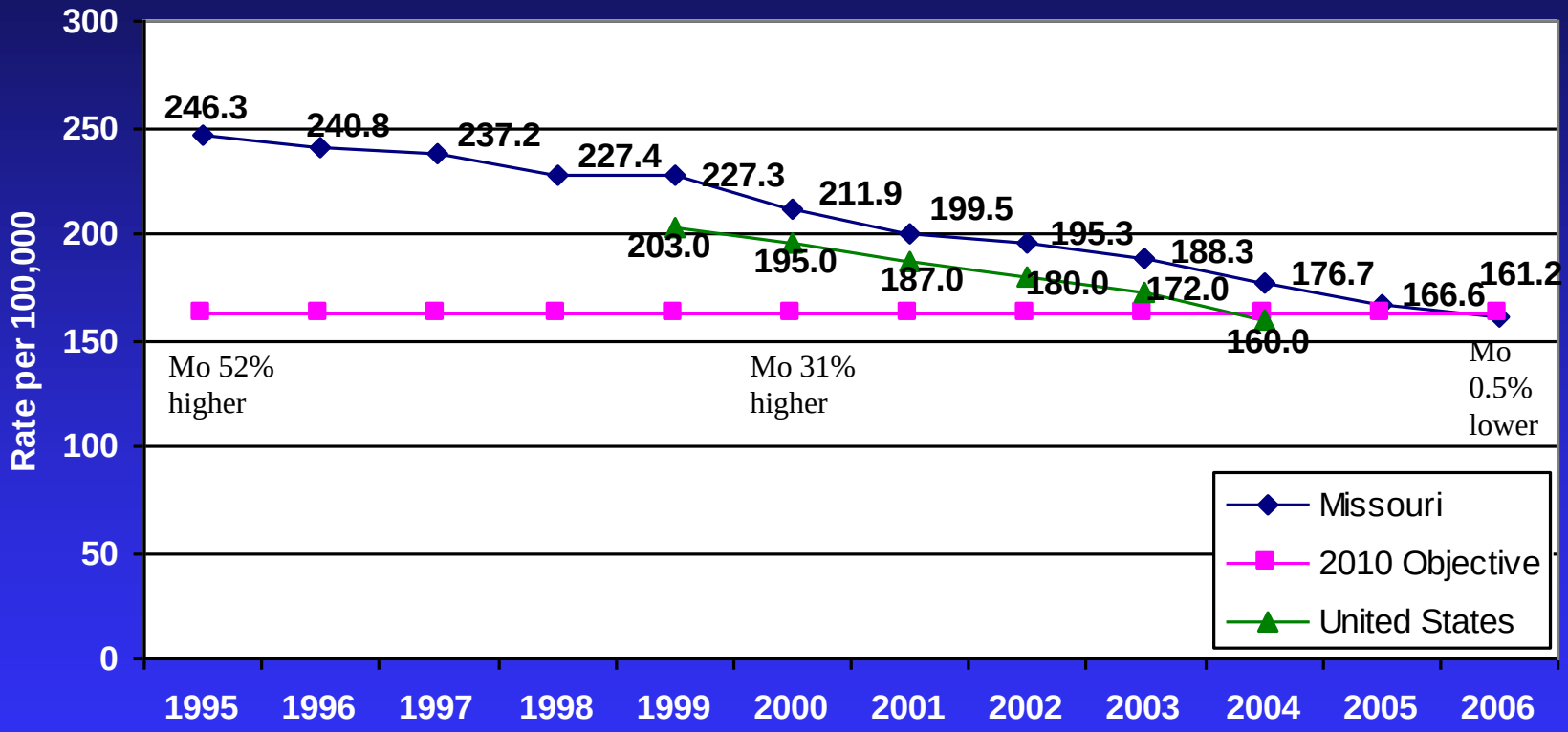
Healthy People 2010 Objectives

- Disease prevention and health promotion objectives for the nation
- Coronary heart disease, about 70% of heart disease, should be reduced to 162.0 per 100,000 population

U.S. Department of Health and Human Services. *HP 2010 Midcourse Review.* Accessed 2008 http://www.healthypeople.gov/data/midcourse/html/default.htm

Coronary Heart Disease Mortality Rates, Missouri and 2010 Objective

Age-adjustment uses 2000 U.S. Population as standard



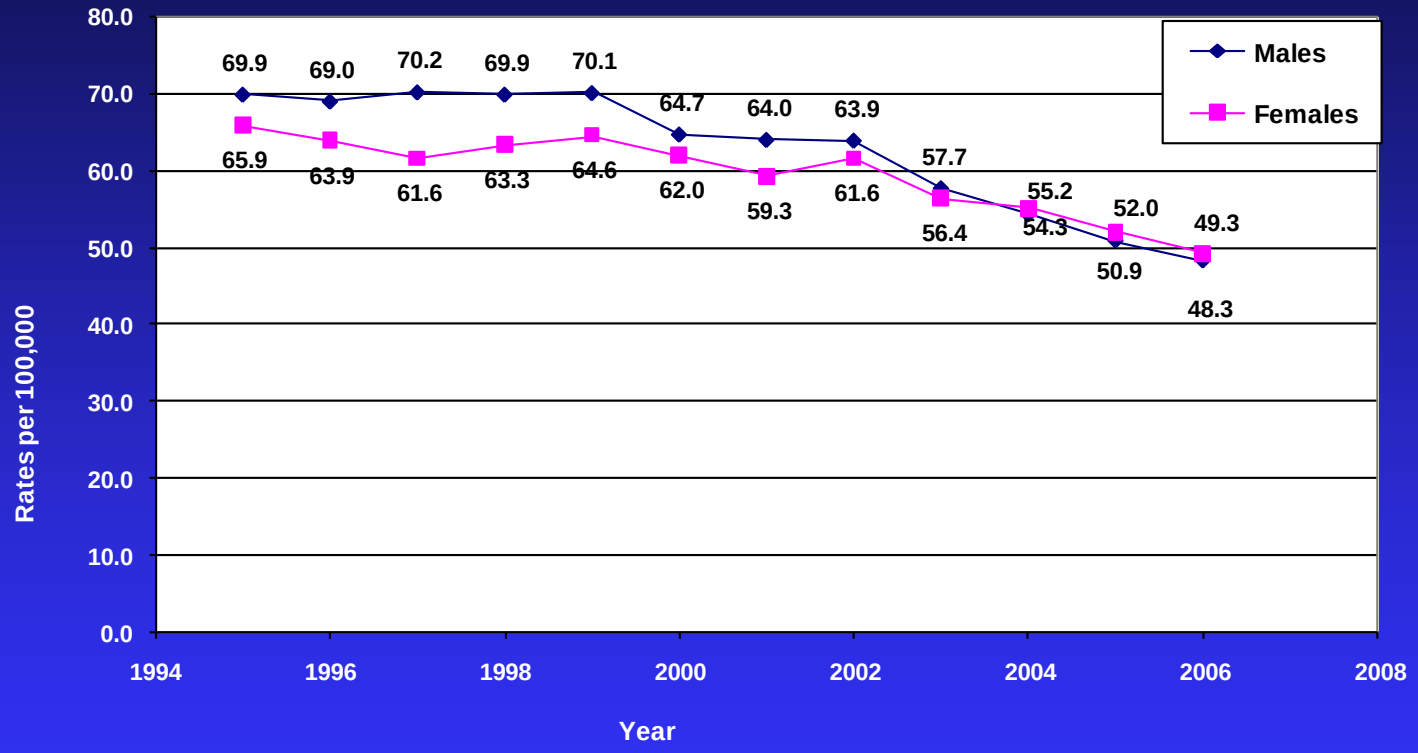
Missouri's rate was 52.0% higher than U.S. in 1995, 31.0% higher in 2004 and just below the 2010 objective in 2006

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/ and National Center for Health Statistics, http://wonder.cdc.gov/scripts/broker.exe

Stroke Mortality

Stroke Mortality Rates by Gender, Missouri, 1995-2007

Age-adjustment uses 2000 U.S. Population as standard

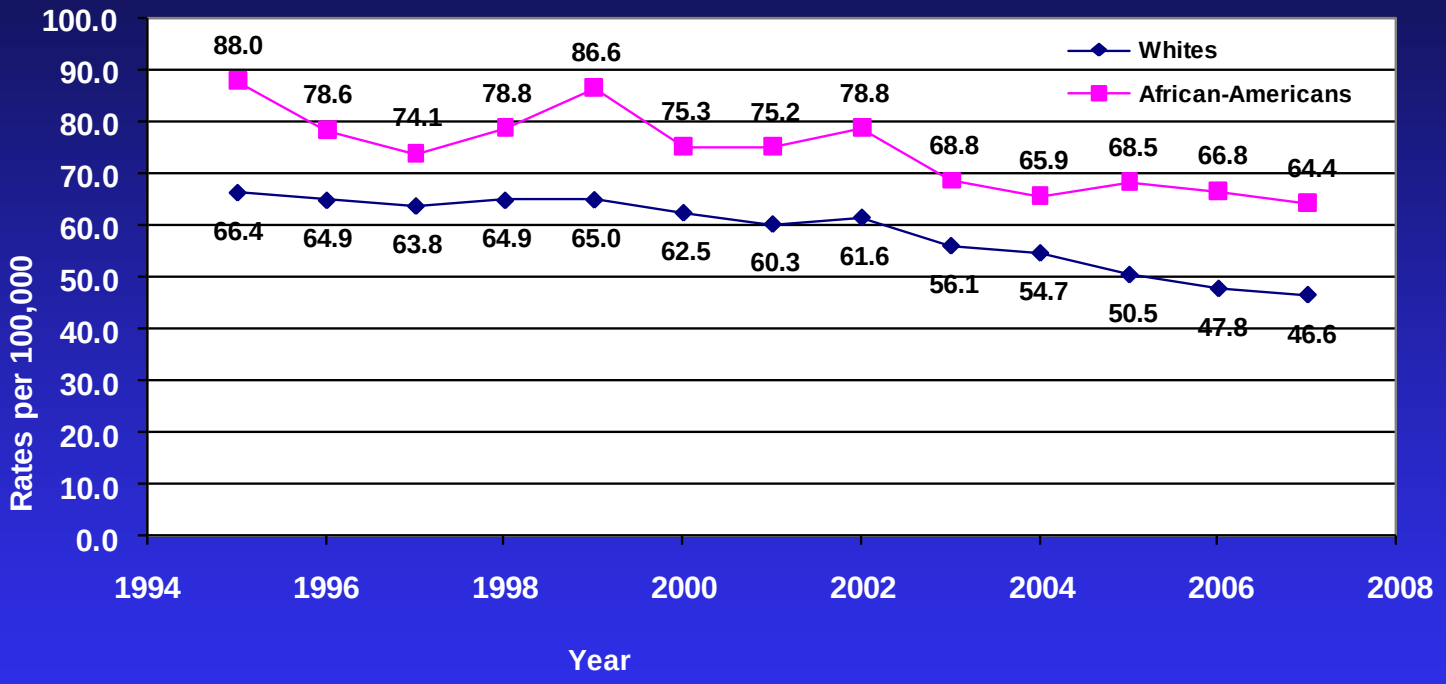


Less gender difference for stroke deaths. However, the female death rate surpassed that of males in 2004

Missouri Department of Health and Senior Services. 2008 *Death MICA*. http://www.dhss.mo.gov/DeathMICA/

Stroke Mortality Rates by Race, Missouri, 1995-2007

Age-adjustment uses 2000 U.S. Population as standard

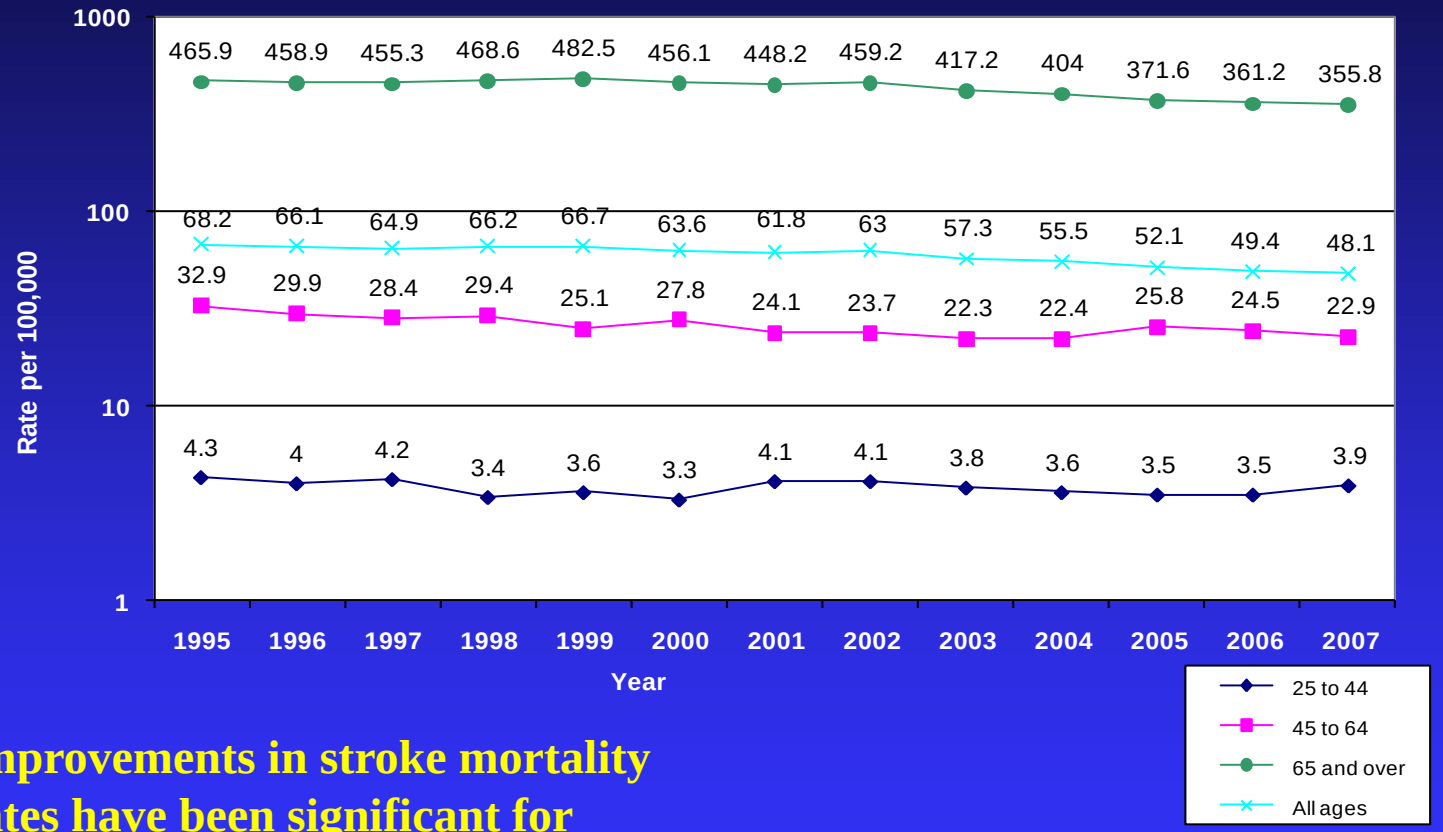


The death rate among African-Americans was 32.5% higher than whites in 1995, 35.6% higher in 2005 and the gap increased to 38.2% higher in 2007

Missouri Department of Health and Senior Services. 2008 *Death MICA*. http://www.dhss.mo.gov/DeathMICA/

Stroke Mortality Rates by Age Groups, Missouri, 1995-2007

Age-adjustment uses 2000 U.S. Population as standard



Improvements in stroke mortality rates have been significant for persons aged 45-64 and 65 and older since 1995.

This chart is on a logarithmic scale, meaning it uses the logarithm of a rate instead of the rate itself in order to compare the large range of ages.

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/

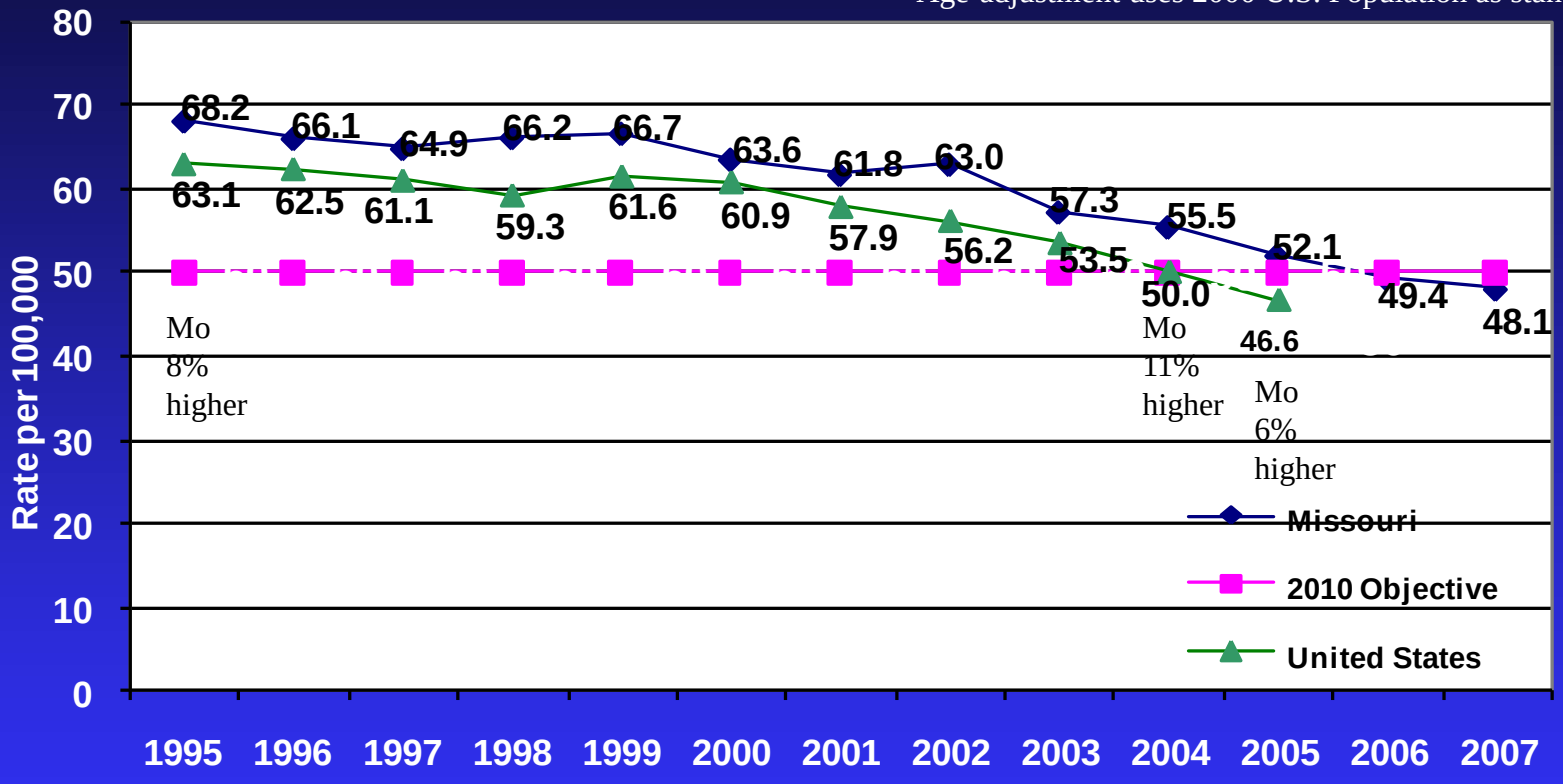
Healthy People 2010 Objectives

- Stroke should be reduced to 50.0 per 100,000 population

U.S. Department of Health and Human Services. *HP 2010 Midcourse Review.* Accessed 2008 http://www.healthypeople.gov/data/midcourse/html/default.htm

Stroke Mortality Rates, Missouri and U.S. and 2010 Objective

Age-adjustment uses 2000 U.S. Population as standard



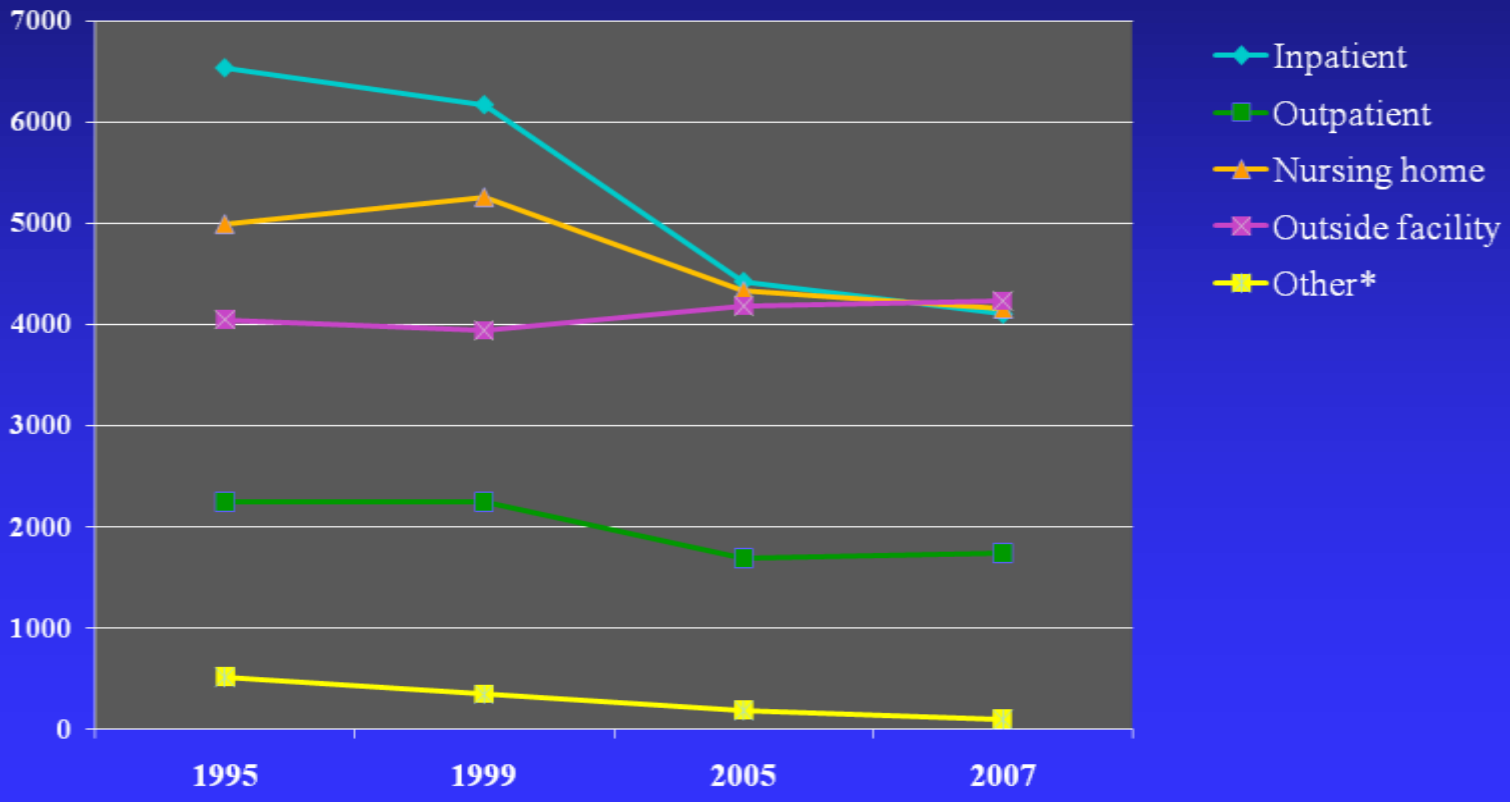
Missouri's rate was 8.0% higher than U.S. in 1995, increased to 11.0% higher in 2004 and remains 6.0% higher in 2005

Missouri Department of Health and Senior Services. *Death MICA*. http://www.dhss.mo.gov/DeathMICA/ and National Center for Health Statistics, http://www.cdc.gov/nchs/

What has contributed to the decrease in heart disease and stroke mortality?

Heart Disease: Trends in Place of Death in Missouri

- Heart disease deaths, -37.3% inpatient deaths 1995-2007

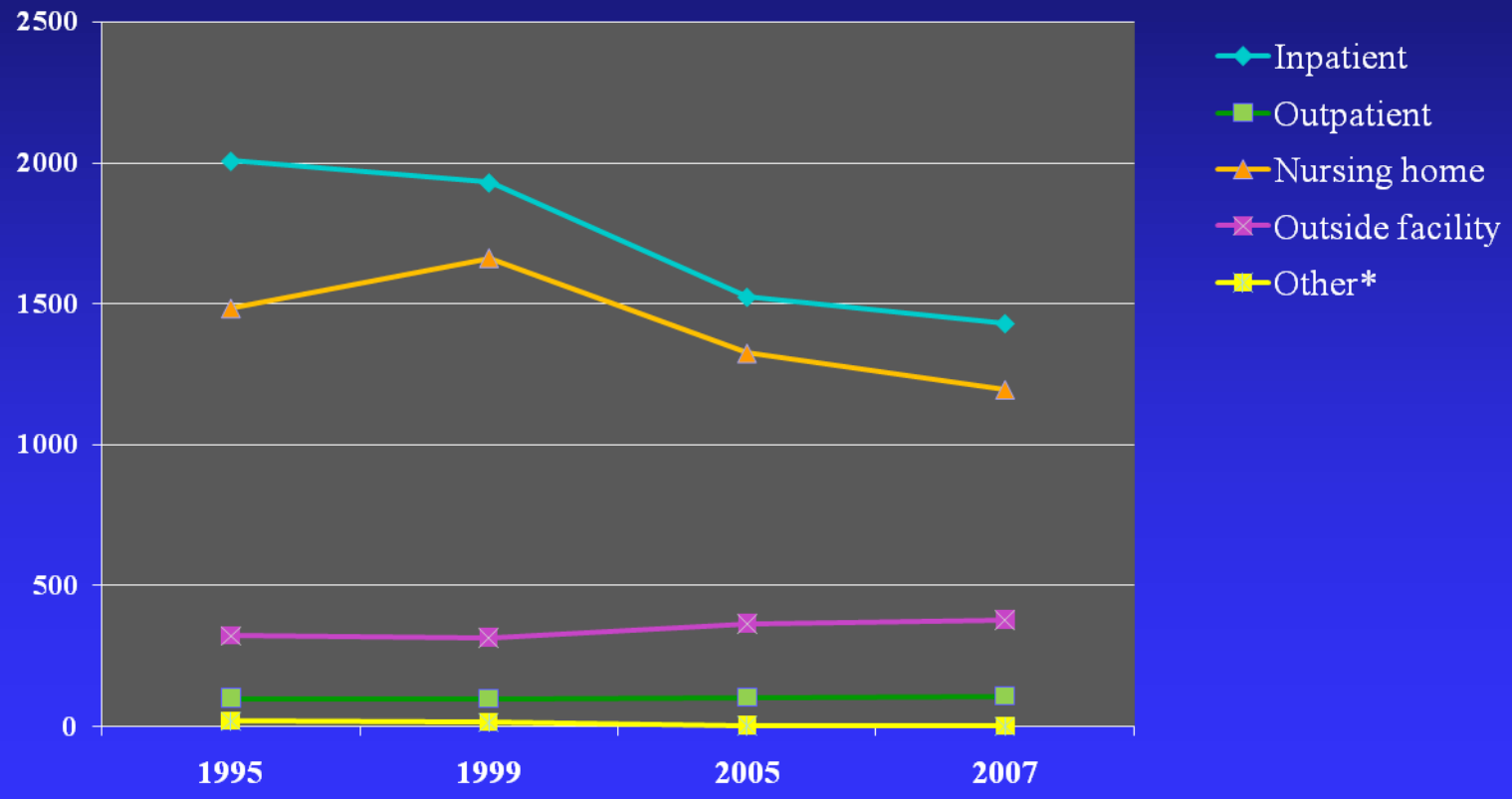


*Other includes DOA and unknown

Missouri Department of Health and Senior Services. Bureau of Health Informatics.

Stroke: Trends in Place of Death in Missouri

- Stroke deaths, -28.8% inpatient deaths 1995-2007



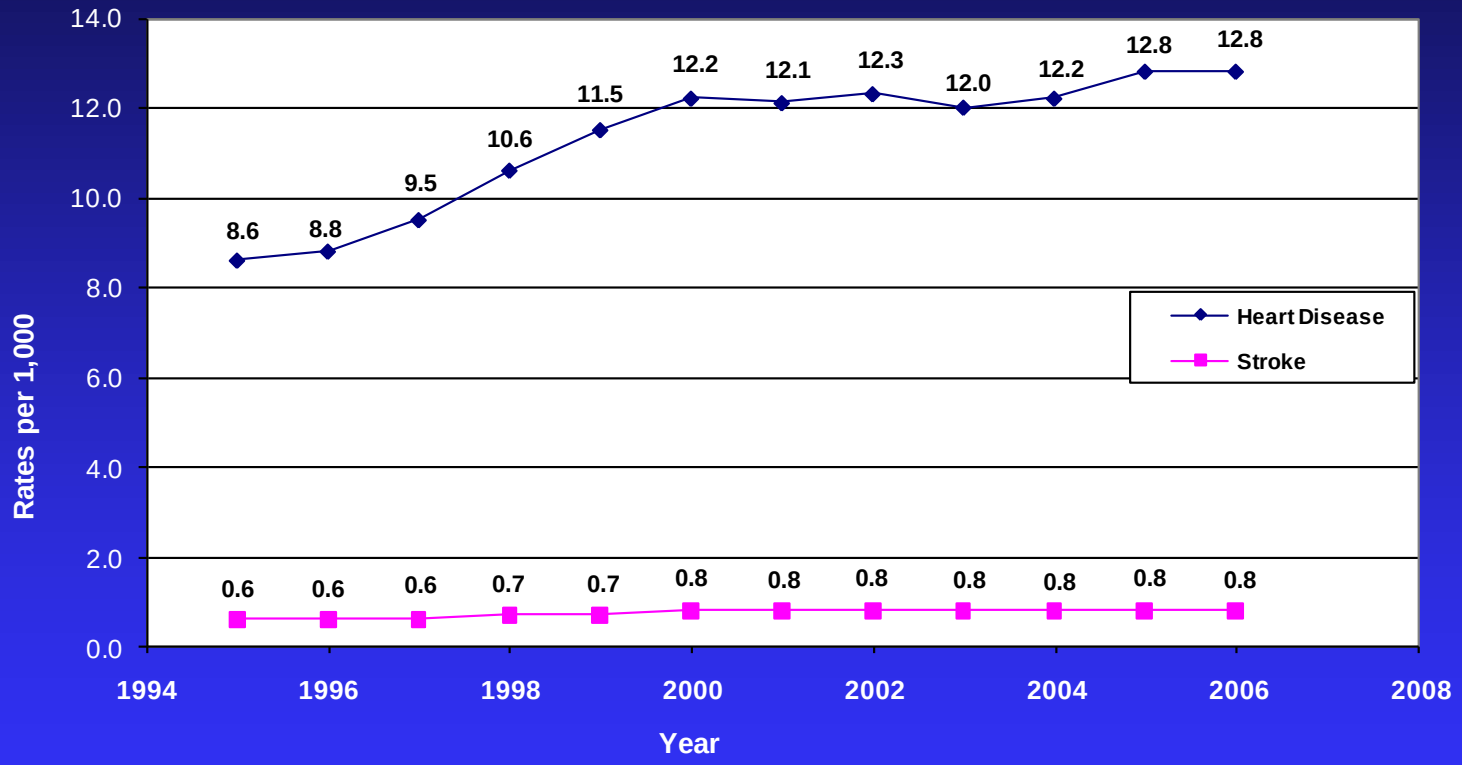
*Other includes DOA and unknown

Missouri Department of Health and Senior Services. Bureau of Health Informatics.

Heart Disease and Stroke ED Visits, Hospitalizations and Dispositions

Heart Disease and Stroke Emergency Department Visits, Missouri, 1995-2006

Age-adjusted rates using 2000 U.S. Population

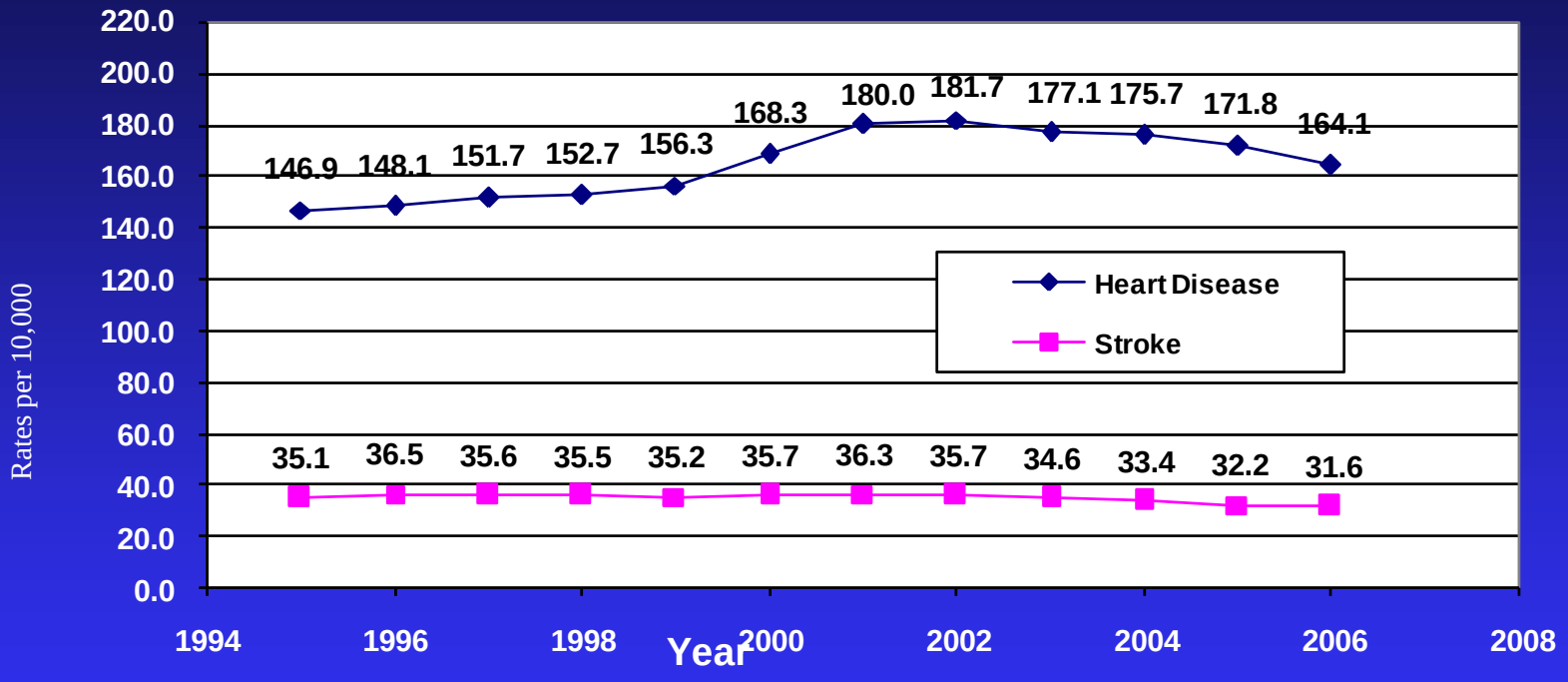


- ED Visits for both heart disease and stroke, to a lesser degree, have increased since 1995
- Represents people who visited ER and were discharged or died

Missouri Department of Health and Senior Services. (2007). Emergency Room MICA. http://www.dhss.mo.gov/EmergencyRoomMICA/indexcounty.html

Missouri Heart Disease and Stroke Hospitalizations, Missouri, 1995-2006

Age-adjusted rates using 2000 U.S. Population



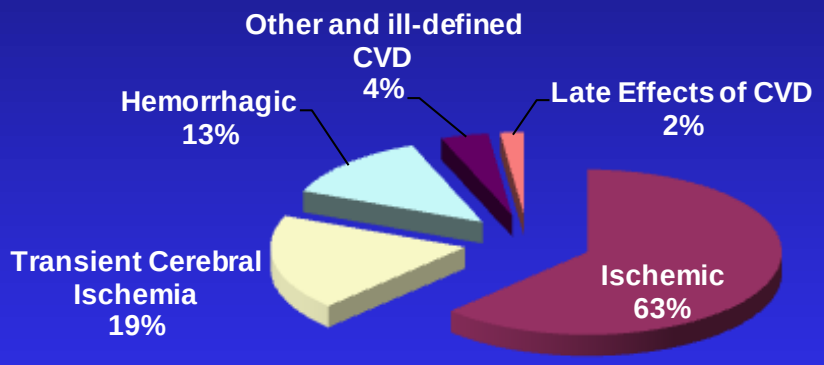
- About one in six hospitalizations are due to heart disease or stroke
- The hospitalization to death ratio has increased from 1995 to 2005 for both heart disease (4:1 to 7:1) and stroke (5:1 to 6:1)

Missouri Department of Health and Senior Services. Inpatient Hospitalization MICA. 2007 http://www.dhss.mo.gov/EmergencyRoomMICA/indexcounty.html

Stroke Types Out of All Cerebrovascular Disease, Missouri, 2005

Ischemic strokes are 85% of hospitalizations for acute strokes, 2001-2005

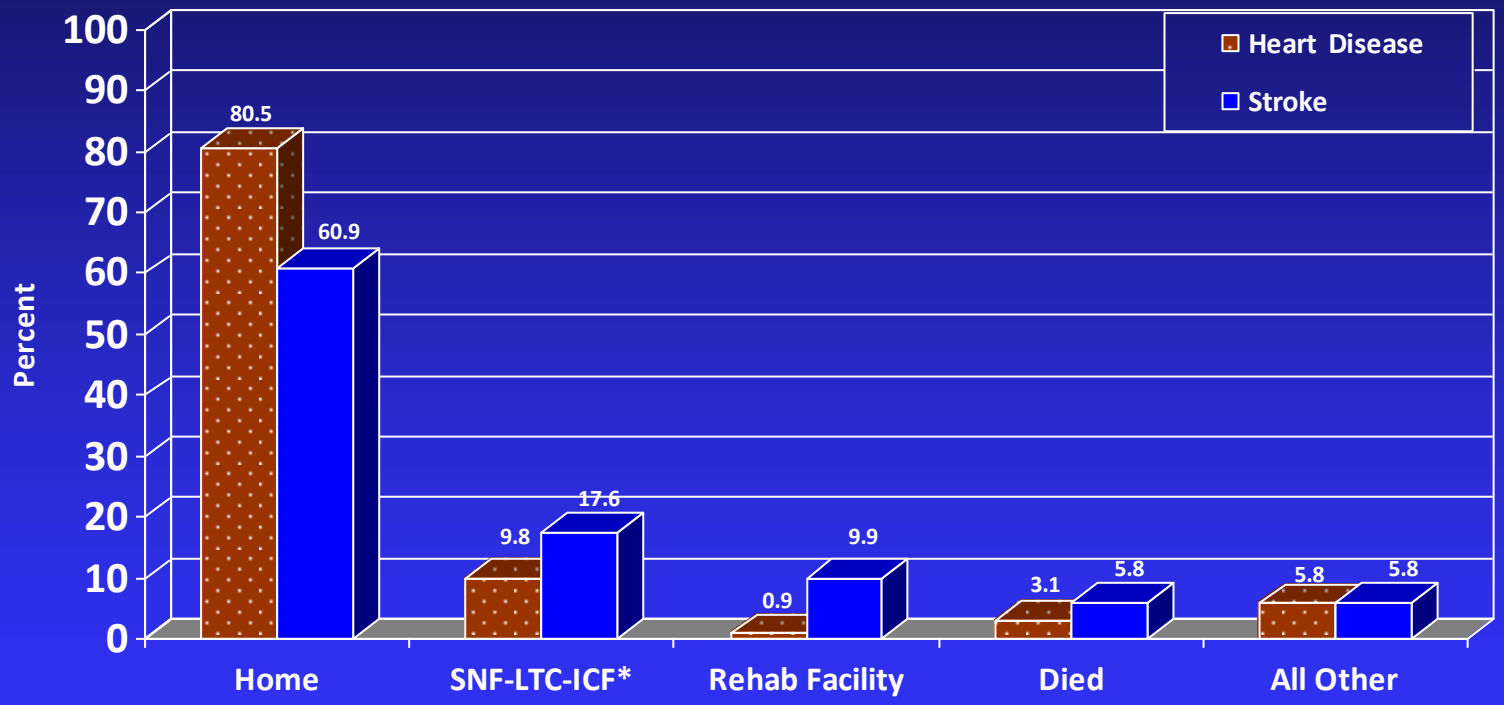
N = 20,310



Missouri Department of Health and Senior Services. (2007). *Patient Abstract System data.* Bureau of Health Informatics and *Community Data Profiles - Stroke*.

Heart Disease and Stroke Hospital Dispositions, Missouri 2005

Heart Disease (N = 91,509) and Stroke (N = 20,310)

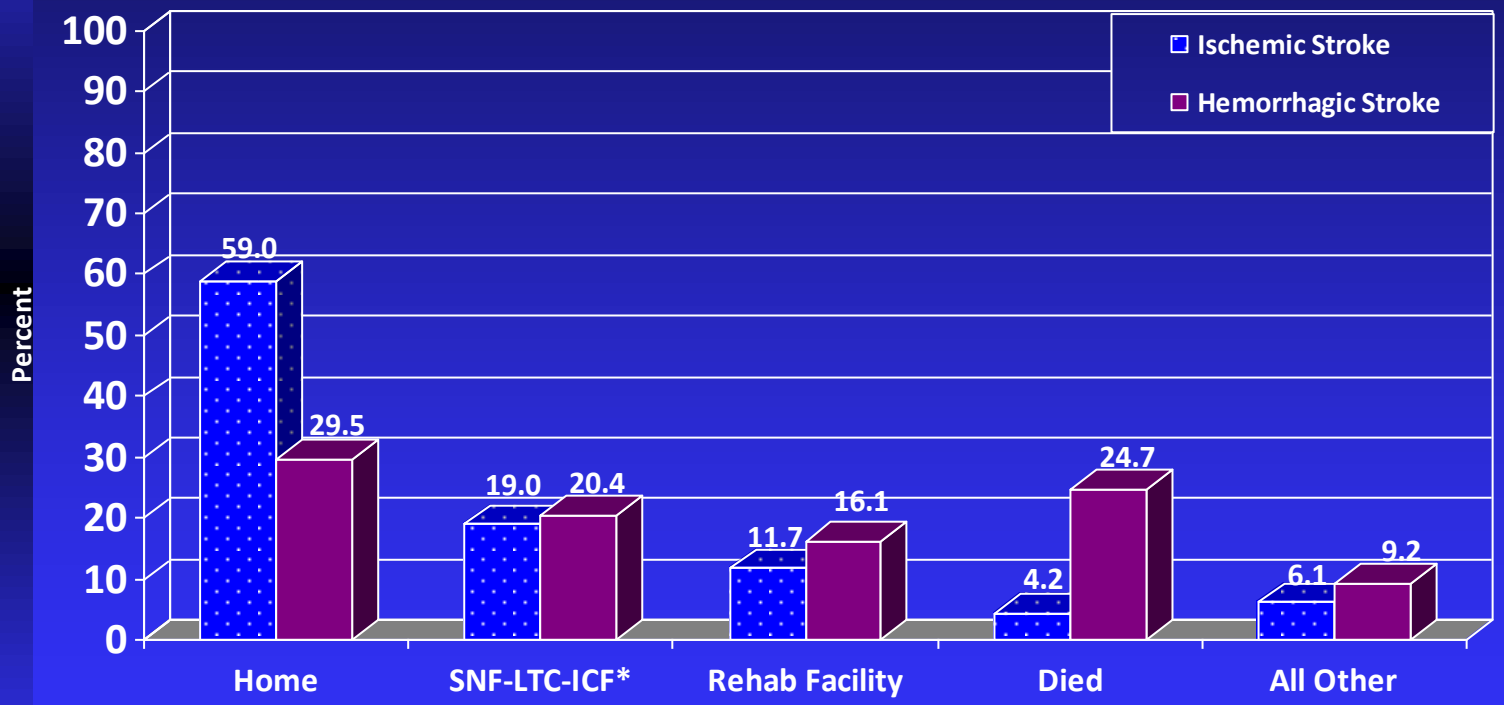


*Skilled nursing facility, long-term care facility, and intermediate care facility.

Missouri Department of Health and Senior Services. (2007). *Patient Abstract System data.* Bureau of Health Informatics.

Hospital Dispositions by Stroke Type, Missouri 2005

Ischemic Stroke (N = 12,698) and Hemorrhagic Stroke (N = 2,552)



*Skilled nursing facility, long-term care facility, and intermediate care facility.

Missouri Department of Health and Senior Services. (2007). *Patient Abstract System data.* Bureau of Health Informatics.

Prevalence and Behavioral Risk Factors

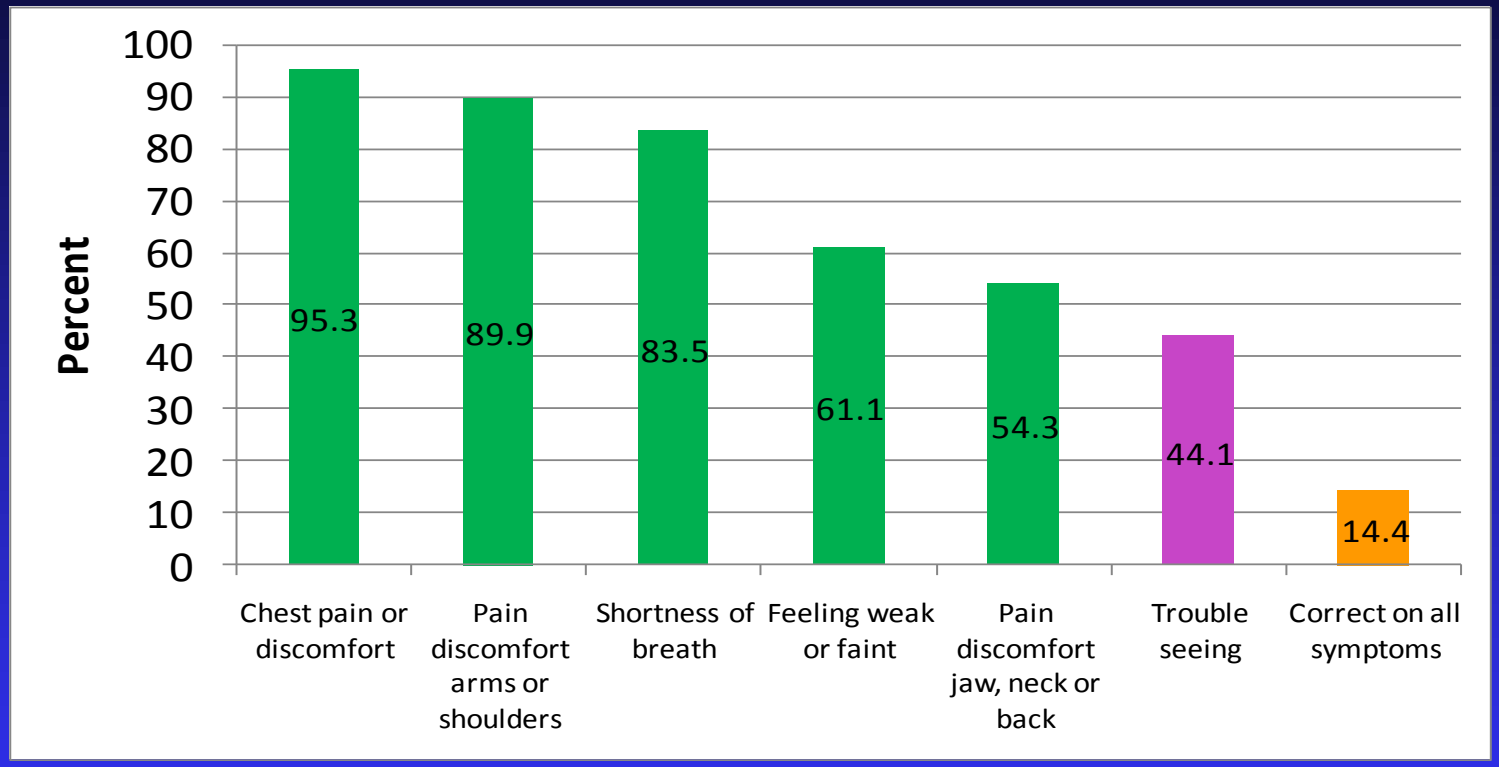
Prevalence of Heart Attack, CHD, and Stroke, Missouri 2007

- Represents over 209,000 Missourians having a previous heart attack and/or coronary heart disease

- Represents almost 165,000 stroke survivors who were able to respond to a telephone survey

Centers for Disease Control and Prevention. (2007). *Behavioral Risk Factor Surveillance System Data.*

Heart Attack Signs and Symptoms Recognition in Missouri, 2007*

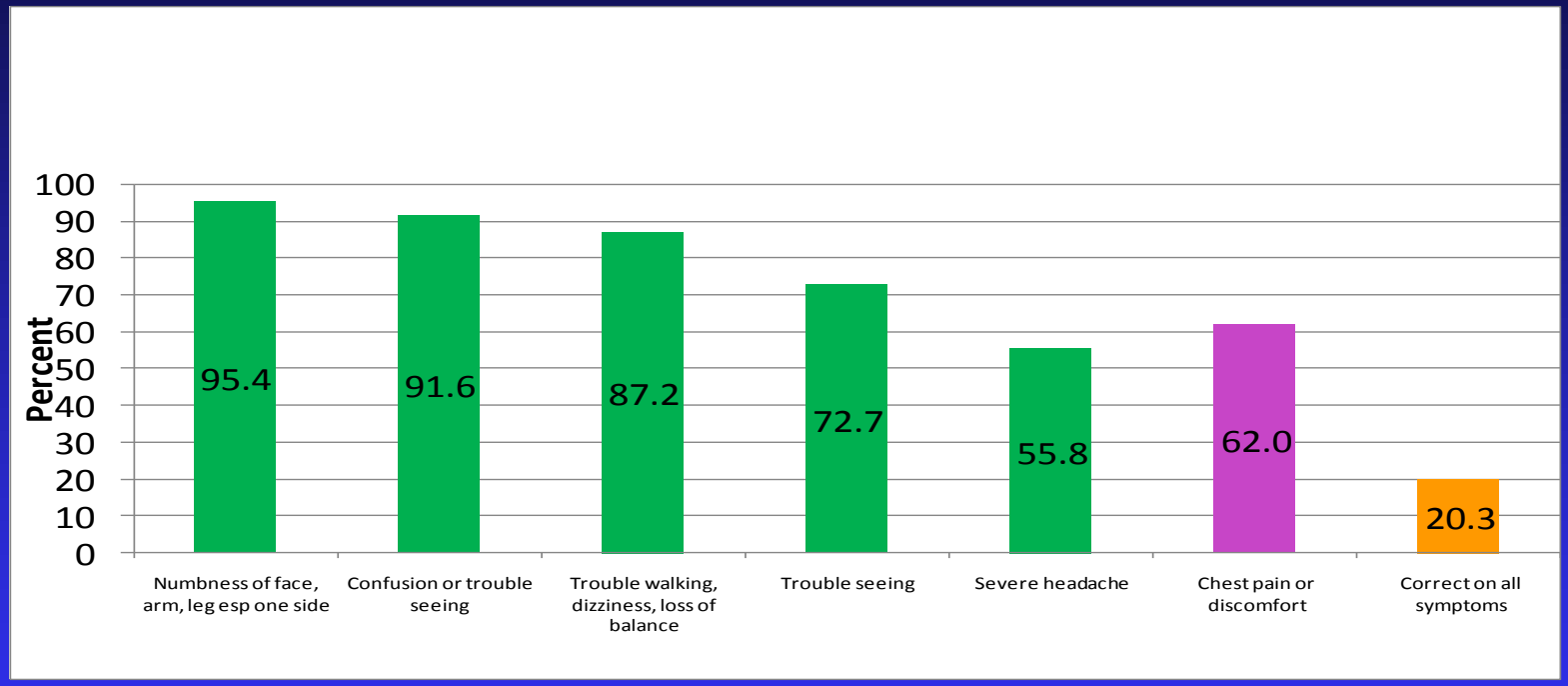


*Correct "Yes" response to all questions except trouble seeing that has a correct response of "No". "Don't know / not sure considered an incorrect response.

Weighted crude percents.

Missouri Department of Health and Senior Services 2007 Behavioral Risk Factor Surveillance System Data Report.

Stroke Signs and Symptoms Recognition in Missouri, 2007*



*Correct "Yes" response to all questions except chest pain or discomfort that had a correct response of "No". Don't know / not sure considered an incorrect response.

Weighted crude percents.

Missouri Department of Health and Senior Services 2007 Behavioral Risk Factor Surveillance System Data Report.

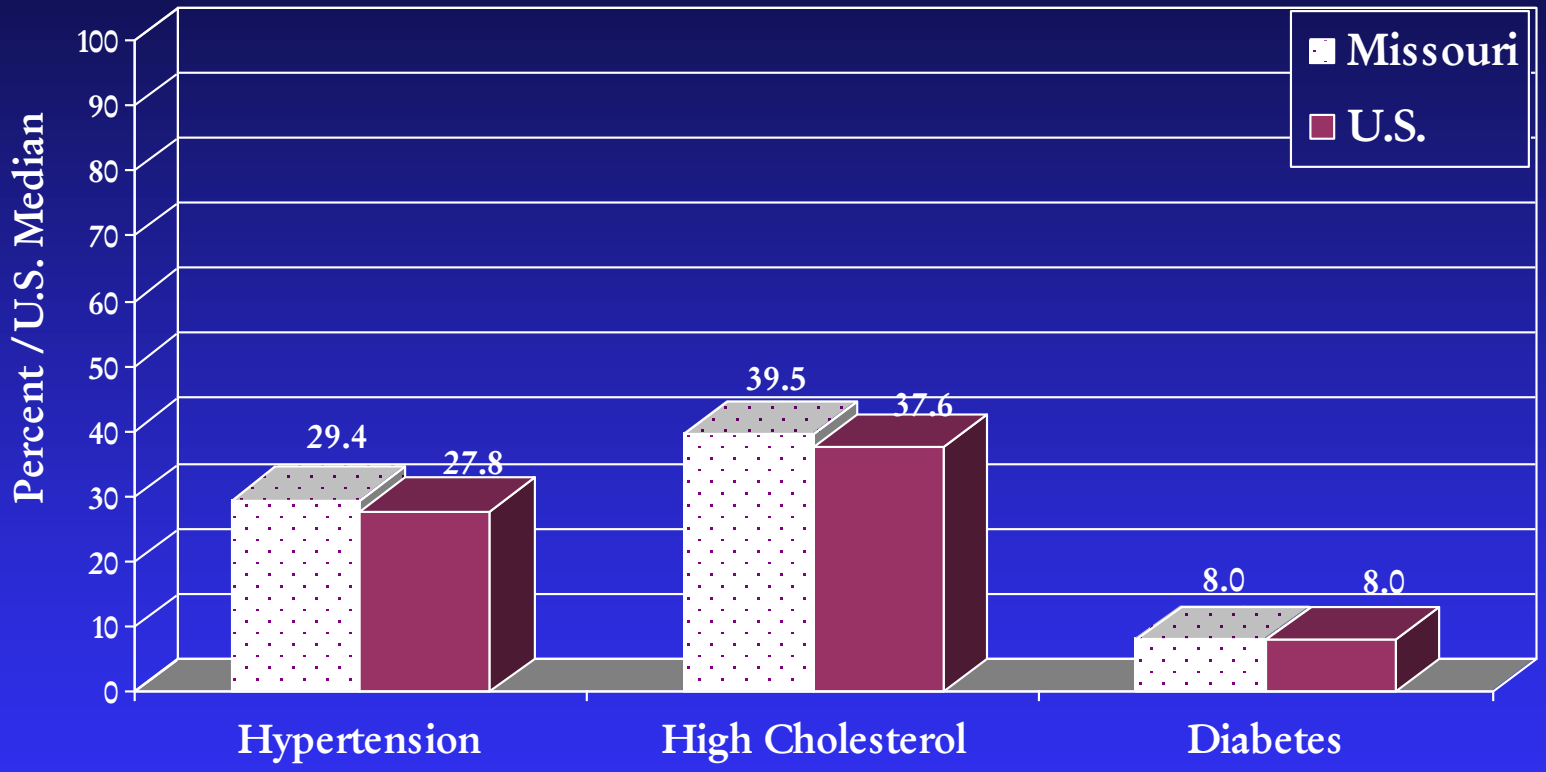
Adult Emergency Response, Missouri, 2007

If you thought someone was having a heart attack or stroke, what is the first thing you would do?	
Call 9-1-1	87.1%
Take them to a hospital	6.9%
Do something else	4.6%
Call their spouse or family	0.7%
Tell them to call their doctor	0.7%

Weighted crude percents.

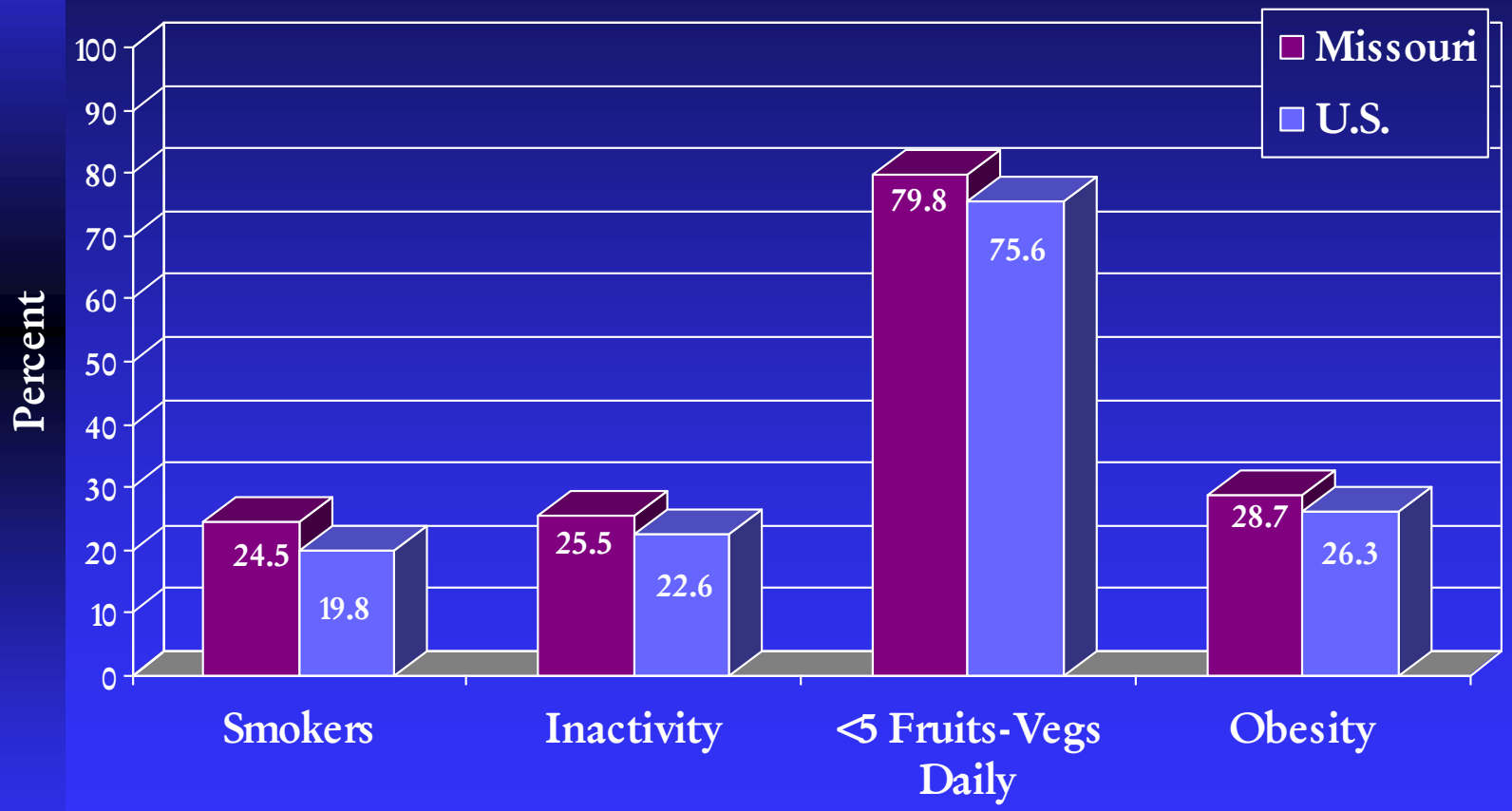
Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Data Report.

Prevalence of Selected Risk Factors, Missouri, 2007



Centers for Disease Control and Prevention and Missouri Department of Health and Senior Services. (2007). *Behavioral Risk Factor Surveillance System.* http:www.cdc.gov/brfss

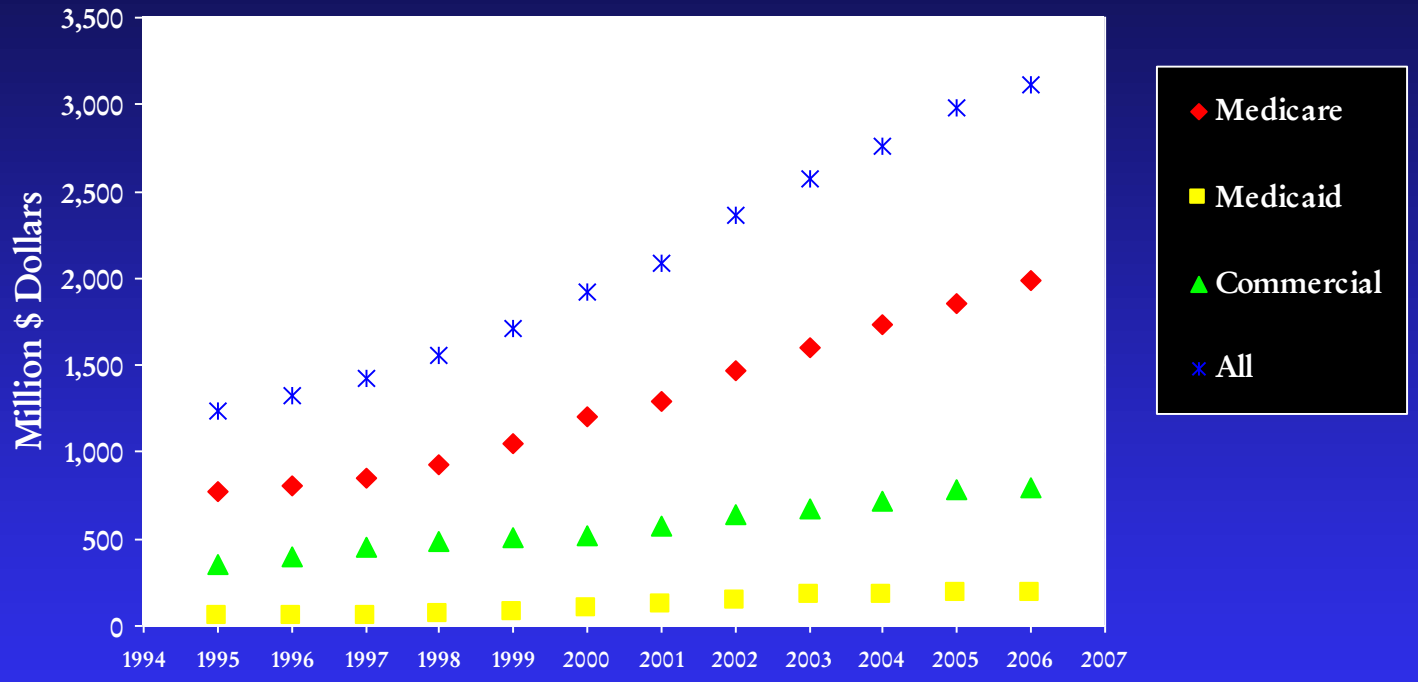
Prevalence of Selected Behavioral Risk Factors, Missouri, 2007



Centers for Disease Control and Prevention and Missouri Department of Health and Senior Services. (2007). *Behavioral Risk Factor Surveillance System.* http:www.cdc.gov/brfss

Heart Disease and Stroke Hospital Charges, Productivity Loss and Years of Potential Life Lost

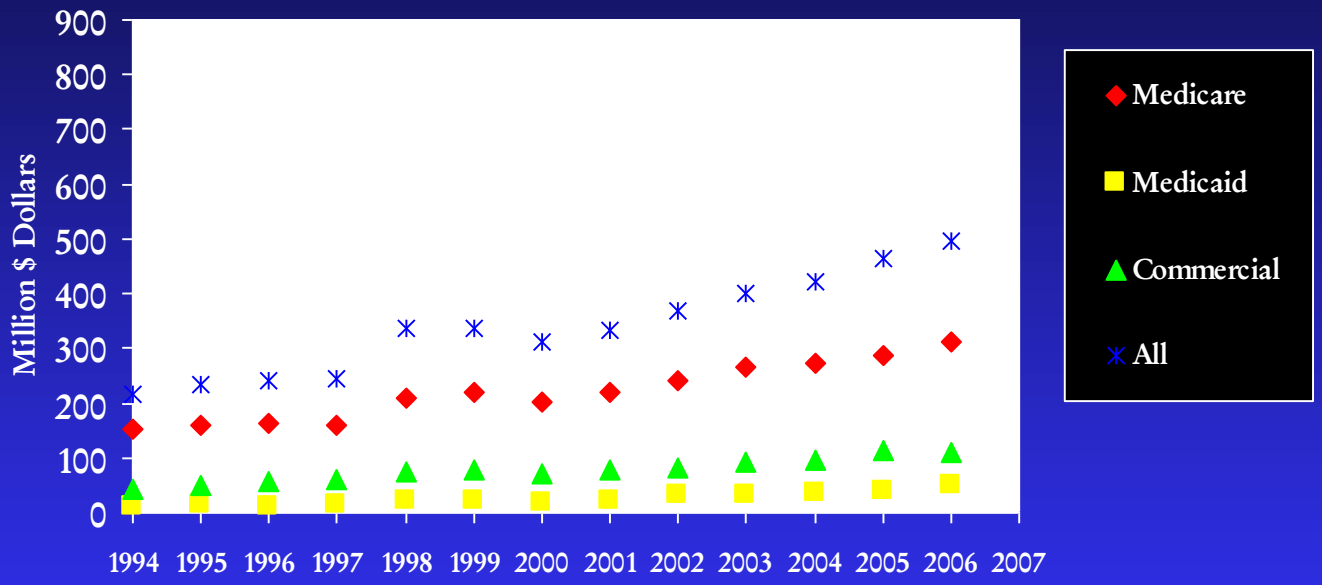
Missouri Hospital Charges for Heart Disease, 1995-2006



Charges not adjusted for inflation.

Missouri Information for Community Assessment (MICA). http://www.dhss.mo.gov/

Missouri Hospital Charges for Stroke, 1995-2006

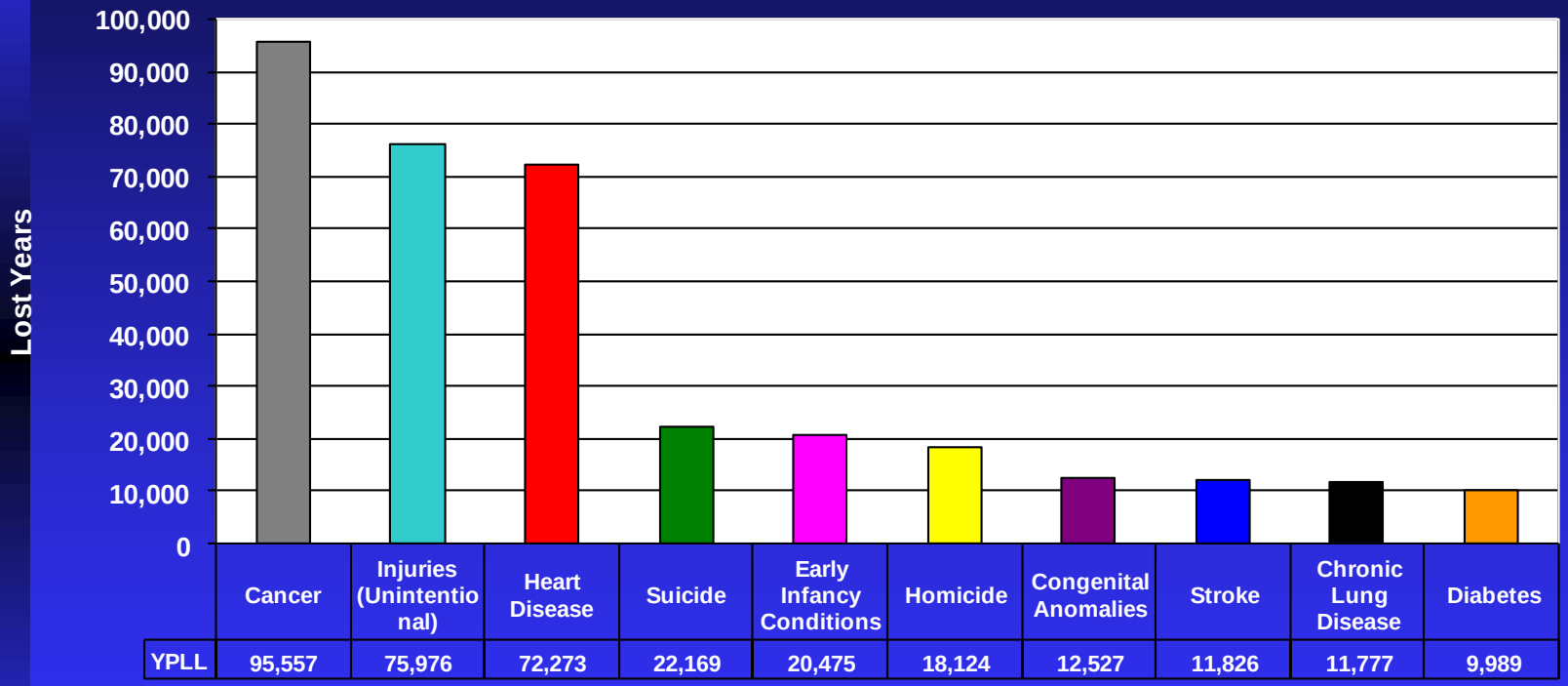


Charges not adjusted for inflation.

Missouri Information for Community Assessment (MICA). http://www.dhss.mo.gov/

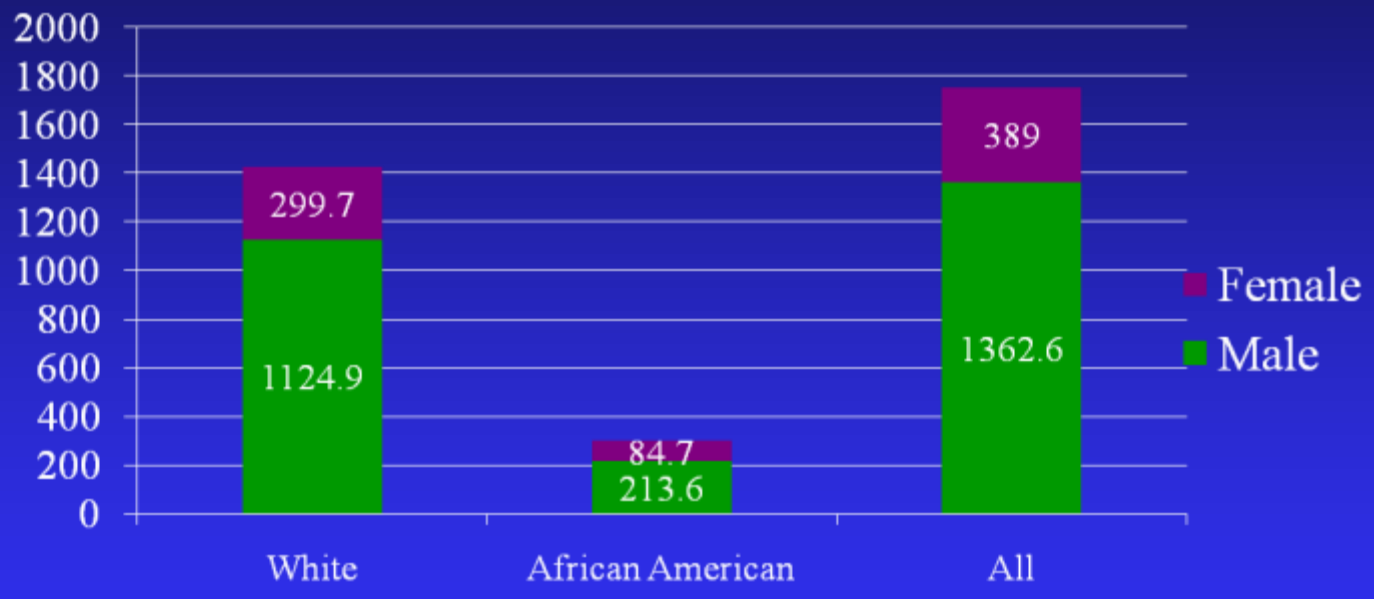
Years of Potential Life Lost in Missouri by Disease and Health Conditions, 2005

Died prior to age 75



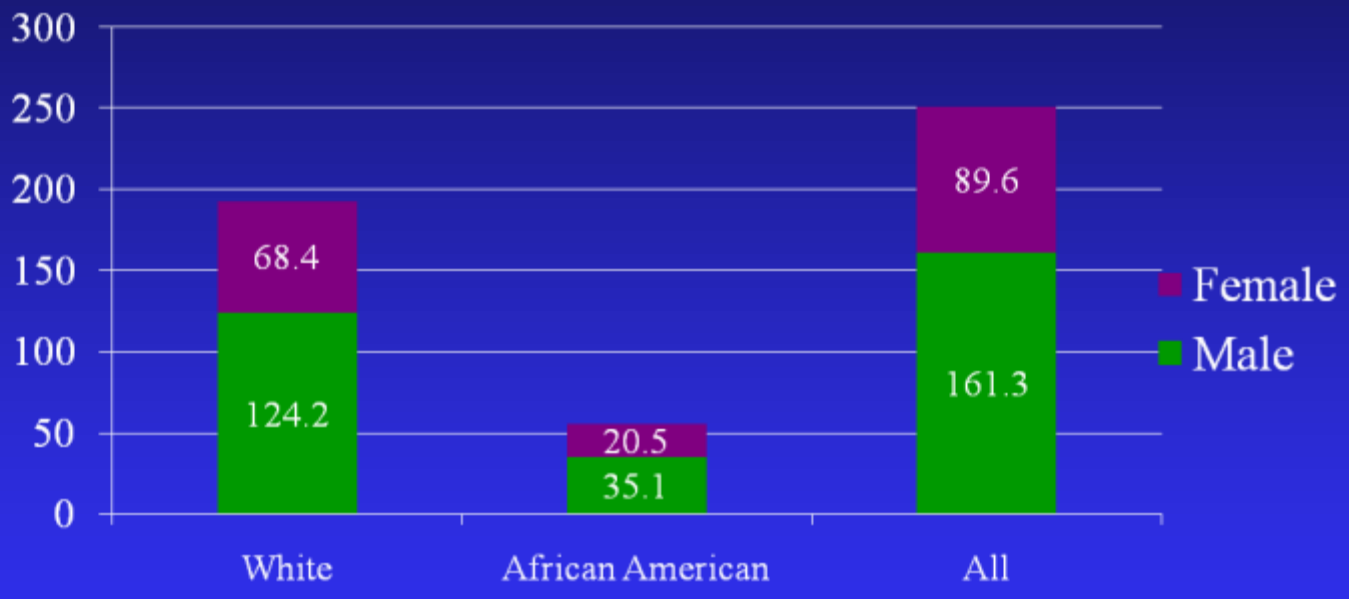
	Cancer	Injuries (Unintentional)	Heart Disease	Suicide	Early Infancy Conditions	Homicide	Congenital Anomalies	Stroke	Chronic Lung Disease	Diabetes
YPLL	95,557	75,976	72,273	22,169	20,475	18,124	12,527	11,826	11,777	9,989

Productivity Loss Due to Premature Death from Heart Disease (Millions of $), 2001-2005



Annual productivity loss was $1.75 billion. Largely attributed to males who die at a younger age and generally have higher salaries.

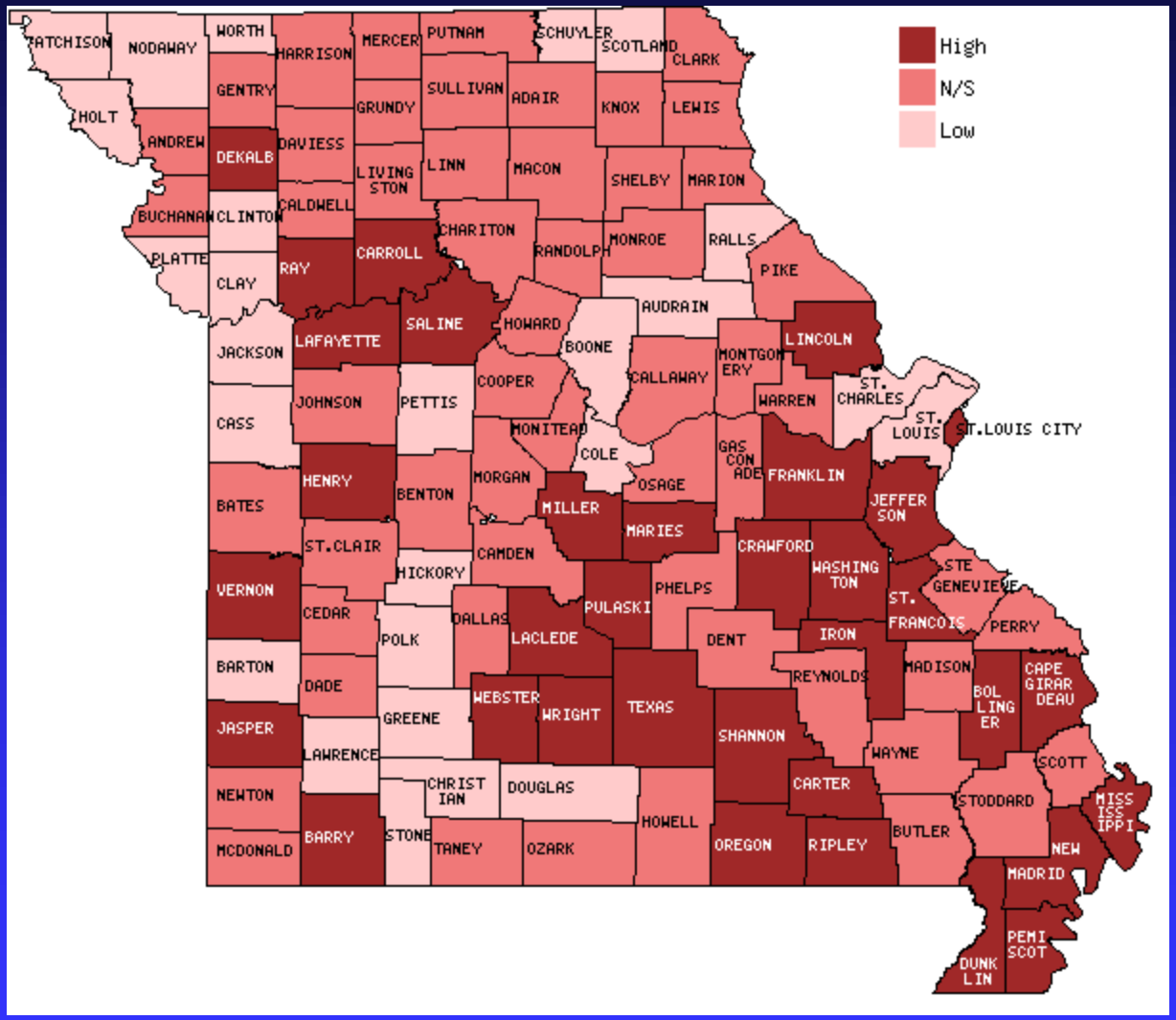
Productivity Loss Due to Premature Death from Stroke (Millions of $), 2001-2005



Annual productivity loss was $251 million. Largely attributed to males who tend to die at a younger age and generally have higher salaries.

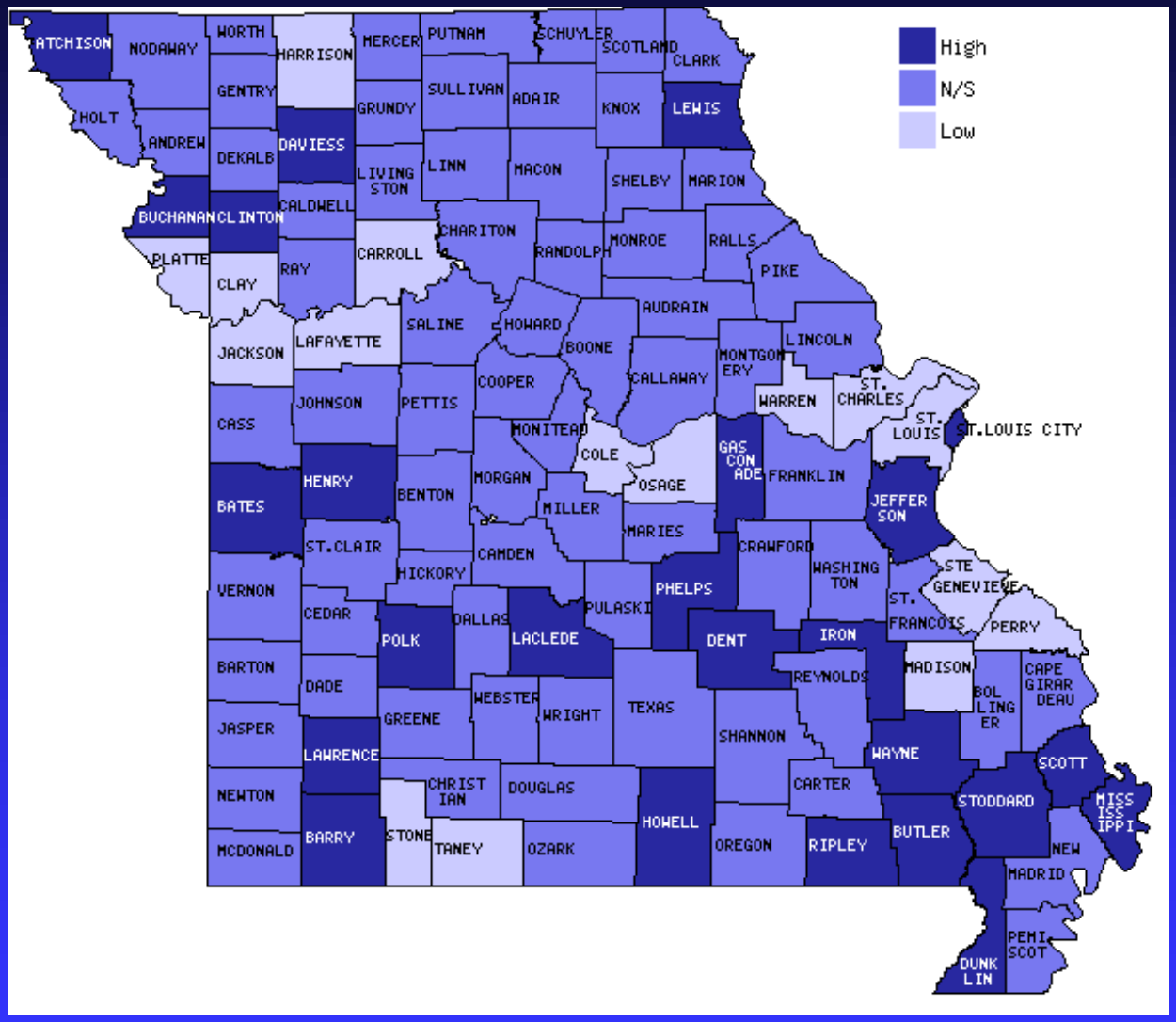
Geographic Disparities

Missouri Heart Disease Deaths by County of Residence, 1999-2007 (Higher / Lower than State Rate)



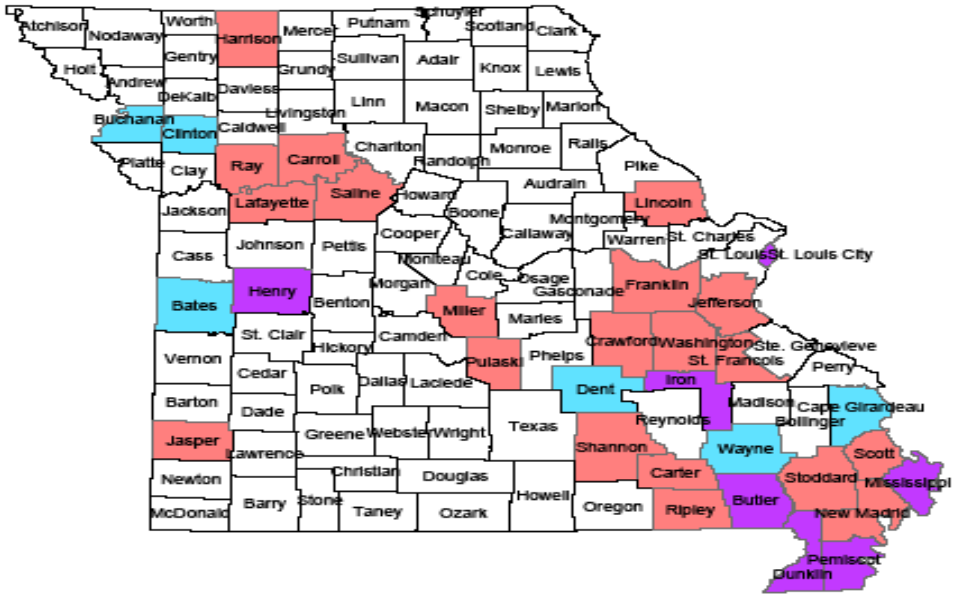
Missouri Department of Health and Senior Services. *Death MICA.* http://www.dhss.mo.gov/DeathMICA/map.html

Missouri Stroke Deaths by County of Residence, 1999-2007 (Higher / Lower than State Rate)



Missouri Department of Health and Senior Services. *Death MICA.* http://www.dhss.mo.gov/DeathMICA/map.html

Map 6
Missouri 1995-2005: Significantly High Rates for Heart Disease & Stroke Mortality & Hospitalizations



Heart Disease and Stroke Mortality & Hospitalization Rates

- Not High for both Mortality & Hospitalizations
- Signficantly Higher Rates for Heart Disease
- Signficantly Higher Rates for Stroke
- Signficantly Higher Rates for Heart Disease and Stroke

Missouri Department of Health and Senior Services. *Death MICA.* http://www.dhss.mo.gov/DeathMICA/map.html

Summary

- ✓ Both heart disease and stroke mortality are declining
- ✓ Medical interventions have played a large role in these declines
- ✓ Deaths and morbidity rates remain unacceptably high
- ✓ Aging of population and adverse trends in risk factors will add to the burden
- ✓ Must continue to promote urgency and immediacy about heart disease and stroke

Summary

- ✓ Increase focus on Missouri counties with high heart disease and stroke mortality and hospitalizations
- ✓ Promote greater adherence to standards of care and control of risk factors
- ✓ Increase knowledge of all signs and symptoms of heart attack and stroke
- ✓ Consider adding STEMI and NSTEMI to Mo surveillance systems
- ✓ Prevalence of heart disease and stroke may be under estimated by BRFSS, requires additional data sources

Thank You

Questions?

Sherri.Homan@dhss.mo.gov